

best known and used in England are the Portland, Bath, Ketton, and the Barnack. Besides these, Caen stone was a good deal employed in some English buildings of an early date (among the rest in Canterbury Cathedral), and is a stone of great durability and utility."

The qualities of the Portland and Bath stone have been already treated on in the columns of *THE BUILDER*. The inferior oolites at Doulting, in Wiltshire, appear to possess some good qualities.

The Ketton stone and the Barnack rag are both of them building-stones, obtained from the oolite strata of Rutlandshire and Northamptonshire. Ketton stone is even-grained and of a dark cream-colour, containing more than 92 per cent. of carbonate of lime and upwards of 4 per cent. of carbonate of magnesia. It absorbs one-fourth of its bulk of water, and its cohesive power is much greater than any other oolite. Many of the buildings in Cambridge are constructed with it.

"The Barnack stone more properly belongs to the shell limestone than to the true oolites; it is of a light whitish brown, consists of 93.4 per cent. of carbonate of lime, and 3.8 per cent. of carbonate of magnesia; it is a little heavier than Ketton stone, but its cohesive powers are not more than two-thirds. It is, however, an excellent stone, several buildings of the twelfth and thirteenth centuries built of it being in admirable condition, and scarcely at all decomposed."

There are other varieties mentioned, as the oolites of Lincolnshire, most employed in that county; the remarkable siliceous limestone of Chilmark, in Wiltshire, noted for its extremely great cohesive power, which is, no doubt, owing to the quantity of silica it contains, more than 10 per cent. "The Bolsover quarries, from which the stone for the new Houses of Parliament is procured, and several others that have been recently opened in the neighbourhood, contain about 12 feet of workable stone, in numerous bands from 8 inches to 2 feet thick. This stone is of a light yellowish lemon colour. Its chemical composition consists of 51 per cent. of carbonate of lime, 40 per cent. of carbonate of magnesia, and more than 3½ per cent. of silica. Its specific gravity is 2.316, or considerably greater than that of limestone."

"This admirable stone is not expensive, being cheaper than Portland stone, and worked as easily; but it does not seem to have been much used at a distance from Bolsover, except in slabs for paving. Its qualities of durability are well tested in Southwell Church, Nottinghamshire, a building of the tenth century, and in admirable condition. In this church the Norman portions, built of stone similar to that of Bolsover Moor, are throughout in a perfect state, and the mouldings and carved enrichments are as sharp as when first executed."

"The Roche Abbey quarries, near Bawtry, in Yorkshire, exhibit another instance of semi-crystalline magnesian limestone, but the quality is not at all equal to the stone of Bolsover Moor; and although thick, the stone is so irregularly bedded as to give no certainty to large blocks. This stone contains only 39½ per cent. of carbonate of magnesia, and 57½ of carbonate of lime; and it is both the lightest and the least cohesive of all the magnesian limestones. Roche Abbey, built of it in the thirteenth century, is said to exhibit a fair state of preservation; but this is accounted for by its semi-crystalline condition, and the resistance which the stone therefore offers to the decomposing action of the atmosphere."

"There are two considerable magnesian limestone quarries in the neighbourhood of Doncaster, from both of which building-stone has been obtained, though they appear to differ very considerably in value. The Brodsworth quarries produce a friable stone, with a tendency to oolitic structure; the thickness of the beds is considerable, the price low, and blocks of great size can be procured; but it has not stood the test of time.

"The Park-nook quarries yield a much better stone than those of Brodsworth, and contain about fifteen feet of workable material, which may be obtained of any practicable size. There are buildings of this stone about a cen-

tury old in perfect condition; it is of a cream colour and partly crystalline.

"The Huddlestone quarries, and others in the neighbourhood of Sherburne, supply also a good semi-crystalline magnesian limestone of whitish cream colour, which has been very much and very long used for building purposes, and of which, indeed, parts of Westminster Hall are built. Jackdaw Craig, near Tadcaster, and Smawee, in the same neighbourhood, are also well-known for their quarries, which have supplied the stone for public buildings in many parts of Yorkshire.

"The stone from Jackdaw Craig was employed in the building of York Minster, the transcripts of which date from the thirteenth, and the tower, nave, &c., from the fourteenth century; but from the generally decomposed state of all this stone, more especially in the mouldings and enrichments, it is evidently not one that should be selected for durability. The upper beds, which are the worst, have been the most quarried, and many of the churches of York, besides the cathedral, are proofs of the want of judgment in the architect who selected a material so readily injured by exposure.

"The Smawee quarries, on Bramham Moor, contain a stone slightly crystalline, and probably for that reason more durable than the former. It is not, however, greatly to be depended on, as in Beverley Minster (of the twelfth, thirteenth, and fourteenth centuries), the west tower, the central tower, and other parts built of this stone are in good condition, while in other parts of the building the same material is decomposed.

"The Huddlestone stone, which is much more crystalline, is also a more uniformly excellent building material. Huddlestone Hall, built in the sixteenth century of this stone, is in excellent condition, as is also a church at Hemmingbrough, built of a similar stone in the fifteenth century." Q.

DOVER HARBOUR.

In these days of improvements in all directions and of all manners and kinds, the ancient town of Dover is not entirely backward in the march of amendment. Not content with restoring the fine old church of St. Mary at a very large cost, and adorning the town and neighbourhood with new buildings of allelascies, Dover will soon possess a vastly increased and improved harbour. It was, indeed, at one time contemplated to make it a harbour of refuge, and it is well known that the Duke of Wellington (who, as Governor of the Cinque Ports, has at different times taken so active a part in matters connected with the welfare and advancement of the town) has ever been in favour of such a desirable object being effected. The work, however, would be of so expensive a nature, that nothing short of national means could hardly hope to accomplish it. His Grace is understood to have remarked, "We will improve the existing harbour; but such a work as that must be done by the nation." Yet, it appears, it is not likely Dover will be converted into a harbour of refuge; but the town commissioners, it is declared, are determined to do all in their power to render the harbour as useful and perfect as possible. It is well known that at present it is not very good, yet it can now accommodate ships of 500 tons. It is chiefly used for sailing and steam packets to and from France. Immense sums have been expended upon this haven from the period of Henry VIII., but it is so imperfectly formed at the present time, that a vessel coming in with a direct south wind would be driven against the walls, as there is neither room to turn nor for the ship gradually to expend her force before reaching the extremity of the docks. The harbour has been undergoing repairs of various descriptions almost constantly for many years, but early in this summer an extensive improvement and enlargement was decided upon and commenced that is well calculated to remedy many of the most important objections now existing. Thus "the poor haven, such as it is" (rather derogatively termed in an old description thereof), is likely to be materially raised in the rank and utility of harbours upon the southern coast of England. It is to be so extended by another wing, as it were, being added, that a vessel may enter in full sail, and have room to turn and come gradually to its stoppage, an object that cannot now be attained.

A large piece of land to the east of the existing harbour and between it and the parade has been purchased for the purpose of enlarging the docks, and gates are to be added. Upon the land so appropriated stood, until quite recently, building yards, houses, &c. There also remains as yet upon the site (although they will be removed in the course of the speedily-approaching alterations) a battery, containing several cannon, and buildings that have been used as a magazine, guard-house, &c. A great portion of the space to be converted to the enlargement of the harbour is now in an advanced stage of excavation, and some parts are already being walled in. It was originally intended to have wooden walls for this addition to the haven, but a wiser, though more immediately expensive plan has been adopted, and stone is to be used instead of the former more perishable material. "Wooden walls" have for many ages proved good defences for Old England; but a harbour intended to endure requires something more substantial. Some notion of the important nature of these works may be formed when it is mentioned that no less a sum than 100,000*l.* is proposed to be laid out upon them, in addition to the large amounts that have been spent upon the docks during the last few years. The time which has been specified for the alterations to be completed is three years; but, having regard to the extent of the improvements, and the difficulties that are so often met with in like undertakings, it seems more than probable that they may not be finished until a somewhat longer period has elapsed. The effect, even now, is advantageous, as it gives more room in some portions of the harbour; but eventually it cannot fail to be most important to Dover, in advancing in no slight degree its prosperity as well as utility.—*Times*.

THE IRON TRADE IN SOUTH STAFFORDSHIRE—FALL IN PRICES.

The ironmasters of this district have not been able to maintain the prices of last quarter, notwithstanding their previous resolutions to do so. It was hoped that they might have been able to sustain that advance which for the last few months they were getting, but they have not, and a reduction of no less than 1*l.* per ton has taken place. At their meeting in Birmingham on the 3rd instant, they resolved upon upholding the price, although it was evident that some undercurrent was at work to reduce it. Nothing but conflicting opinions were to be heard amongst the best informed representatives of the largest houses, and it was with difficulty that anything like satisfactory information could be obtained upon the actual state of the market. The price, however, was then declared to be the same as last quarter, and it was reserved for the meeting held at Dudley, last Saturday evening, to make known the actual condition of the trade, and the necessity which existed for a reduction. Various causes are assigned for this fall, and amongst the most probable is the over-speculations of small makers. It would seem many of them, unable to keep stock, have, by underselling the large houses, rendered a sweeping reduction necessary on the part of those extensive proprietors, who have been endeavouring for their own sakes and the general interest of trade to retain something like a remunerating profit. The competition arising from the furnaces of other districts has also, no doubt, materially hastened the issuing of the circulars announcing the above fall of 20*s.* in the ton. It is a heavy reduction, one not usually made suddenly, and least of all not to be expected now, when the railway speculations would seem to hold out the prospect of an enormous demand for at least another year or two.

NEW CUSTOM HOUSE, IPSWICH.—On Friday, the 4th inst., the "raising treat" for this building took place in the large room of the Customs department. The architect, J. M. Clark, Esq., and the builder provided most amply for the entertainment. At 5 o'clock, nearly 100 persons, including several members of the Town Council, sat down to dinner; after which the mayor favoured them with his company for a short time, and who highly complimented Mr. Pettit upon the sound and workmanlike manner in which he had fulfilled his contract up to the present state of the edifice, and upon its near approach to completion.

[* Experience of ancient buildings shows this must be taken with very great limitation.—Ed.]